C·R·E·S®

CENTER FOR REPRODUCTION OF ENDANGERED SPECIES

REPORT

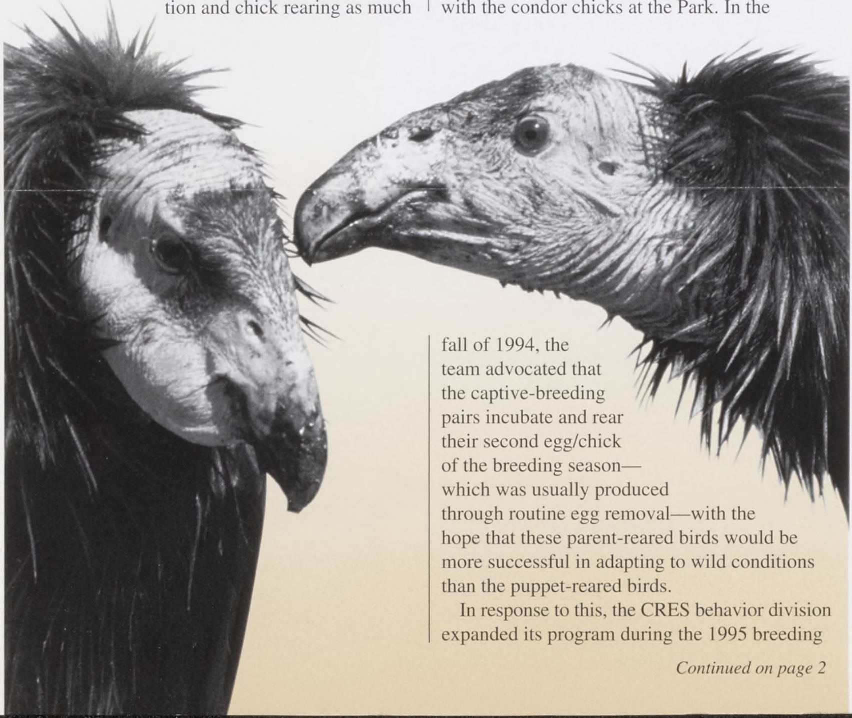
FALL 1998

California Condor Watch: Behavior Studies at the Wild Animal Park

When a species reaches critically low numbers, as did the California condors in the early 1980s, every chick that hatches is vital to the survival of the species. At the San Diego Wild Animal Park, the animal care staff has recorded more than 60 chicks hatched since the Condor Recovery Program began, with 10 hatched between January and April 1998. Every year during the breeding season, staff has carefully monitored the birds' behavior, anxiously awaited the arrival of eggs, assisted at hatchings, and puppet reared the young chicks.

Researchers now know that California condors are monogamous birds, with reproductive bonds that last for many years. In this species, condors typically produce a single egg every two years, and the male participates in incubation and chick rearing as much as the female. But until young birds were released back into the wild, it was unknown whether chicks that were puppet reared were as well prepared for survival as were parent-reared birds.

Between 1988 and 1998, the captive-breeding population at the Park gradually increased from one to seven pairs of birds. Four of these adult birds were parent reared in the wild, while the remaining ten birds were hatched and puppet reared in captivity. Following the survival and behavior problems encountered with the first releases of California condors into the wild in 1992 and 1993, the Condor Recovery Team felt that artificial incubation and puppet rearing may have allowed the birds to become attracted to human-occupied areas and activities, although great care was taken to avoid human contact with the condor chicks at the Park. In the fall of 1994, the team advocated that the captive-breeding pairs incubate and rear their second egg/chick of the breeding season—which was usually produced through routine egg removal—with the hope that these parent-reared birds would be more successful in adapting to wild conditions than the puppet-reared birds.



In response to this, the CRES behavior division expanded its program during the 1995 breeding

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CRES® is operated by the Zoological Society of San Diego.

Coast Horned Lizards in Our Backyards
Habitat studies to save a local species.
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Come Dance Under the CREScent Moon!
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California Condor Watch: Behavior Studies at the Wild Animal Park

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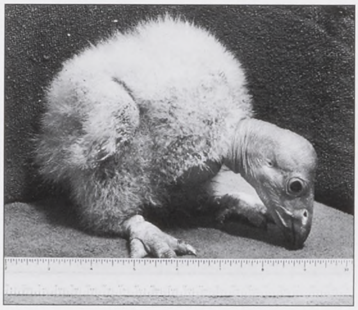
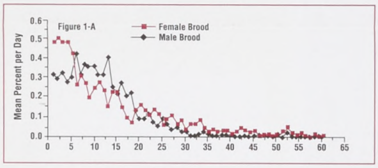
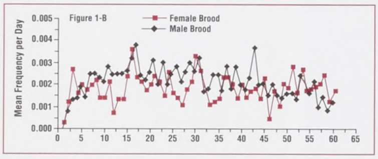
season to include observation of parental care during incubation and chick rearing. All behavioral data are collected from time-lapsed video camera recordings, which allow continuous observations throughout the daylight hours without disturbing the birds in their nest boxes. In this captive population, the CRES geneticist determines which male and female will be placed together for breeding. But in the absence of mate choice, there is always the chance that the pair will not give the best parental care to their chick.

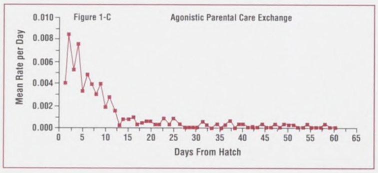
During the incubation phase, which lasts between 56 and 60 days, the behavioral study focused on each male's and female's frequency and duration of attending the nest and egg. Following hatch, the frequency and duration of attending the nest and chick for brooding, feeding, and preening were recorded. CRES staff carefully observed the quality of cooperation between the pair when they exchange places in caring for the egg or chick. Both parents are attracted to and interested in caring for the egg and chick, but not all birds are willing to relinquish their care of their offspring to their partner. As a result, mild to serious aggression (agonistic behavior) can occur between the male and female, which jeopardizes the safety of the egg or chick.



Condors are altricial birds, which means that at the time of hatch, the chicks are totally dependent upon the parents for survival. Following hatch, the chicks are left in the care of the parents until about 100 days of age, when they are removed before the start of the next breeding season. Brooding of the chicks was shared by both parents (see Figure 1-A), and this behavior decreased markedly 35 days after hatch. Overall, it was found the females had a significantly higher mean brooding rate than the males. During the time the parents were caring for the chicks, there was neither a decrease in daily frequency of feeding nor any difference between the sexes in their overall mean rates of feeding the chick (Figure 1-B). The aggressive behavior between the parents was highest for the 12 days following hatch, after which they settled down to a routine of cooperative sharing of duties (Figure 1-C). There are two pairs of birds in the captive population that exhibited higher rates of aggressive encounters in the nest box than the other pairs. Fortunately, the aggressive behavior did not reach a level of intensity that jeopardized the egg or chick.







Parental care studies at the Park need to continue until all captive pairs have proven to be able to incubate, hatch, and rear their own offspring, which will better prepare the chicks for release back into native habitat. Through funding by the Heller Foundation of San Diego, and a grant from the Amerman Foundation for the purchase of video equipment, such captive-breeding efforts and behavioral data are helping to save California condors.

—Nancy C. Harvey, Ph.D.
CRES Behaviorist

—Cindy L. D. Woodward
CRES Behaviorist

—Kristin M. McCaffree
Bud Heller Fellow at CRES

Thanks to The Heller Foundation *of* San Diego

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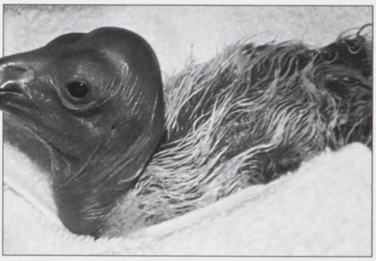
The Heller Foundation of San Diego has established in perpetuity the Bud Heller Conservation Fellowship for CRES research at the San Diego Wild Animal Park. The $30,000 annual fellowship was named in memory of the late Bud Heller, who quietly supported the Zoological Society for many years to help make the Wild Animal Park the treasure that it is today. Bud's generous personal and foundation gifts, which consisted of much-needed yet unglamorous items from trucks to wire fences, totaled nearly half a million dollars. Bud always declined the recognition he so deserved, and the Society is delighted that the Heller Foundation of San Diego has chosen to make this meaningful tribute to a modest man who made an important difference to conservation.

The Bud Heller Conservation Fellow for 1998 is Kristin M. McCaffree of the behavior division at CRES, and she is part of the team working on the California Condor Recovery Program at the Wild Animal Park. Since the early 1980s, when fewer than 30 California condors remained in the wild, the Zoological Society has been involved with efforts to save these majestic birds. This Fellowship is vital to the program, just at a time when behavioral data is needed on chicks that were parent reared versus chicks that have been puppet reared. CRES gratefully acknowledges gifts from an anonymous donor and Barton Cotton in 1996 and the Heller Foundation in 1998 for their generous support, without which the behavioral studies on parental care in captive California condors would not have been possible.



INSIDE CRES

Ecology

Many San Diegans can recall seeing coast horned lizards in their backyards as late as the 1960s. But as a result of urban and agricultural development, pesticide use, over-collecting, off-road vehicle activity, and introduced species, the once abundant San Diego coast horned lizard has undergone serious population declines in recent decades. In the CRES ecology division, we are currently carrying out research to evaluate different habitats for their ability to support horned lizard populations. In undisturbed sage scrub habitats, we have found that plant densities are higher and the proportion of nonnative species is lower than in habitats disturbed by fire or grazing. Our results to date indicate that horned lizards in disturbed habitats are less abundant, suffer from higher rates of predation, exhibit smaller body size, a lower-quality diet, and larger home range sizes than those in undisturbed habitats. By correlating reproductive processes with energy budgets, nutritional condition, and the health status of individual horned lizards, we hope to better understand how habitat disturbance affects the persistence of horned lizard populations in nature.

Tandora Grant

Endocrinology

American alligators have made a comeback through protection efforts. In collaboration with the Louisiana Fish and Wildlife Department, the CRES endocrinology division is studying a captive-reared alligator release program. The State of Louisiana uses the American alligator as a sustainable resource. Currently there are more than 100 farms that raise alligators for their meat and skin. The farms operate by collecting eggs from the nests of wild alligators, incubating the eggs at a constant temperature until they hatch, and raising the hatchlings until they are large enough to market. Each female produces a clutch of about 40 eggs in June. Under natural conditions, it is estimated that about 80 percent of the nests are lost to predators, flooding, or desiccation. Under an experimental program administered by the Louisiana Fish and Wildlife Department, the alligator farmers are required to release a percentage of the hatchlings after one or two years, back into the area from which the eggs were collected. The release is carried out by the department biologists. Every juvenile alligator that is released is marked with two tags attached to the skin between the toes. These captive-reared alligators are significantly heavier than wild alligators of similar length. Since this program started, more than 50,000 alligators have been released. Follow-up studies have included comparisons of growth rates, food habits, and reproduction of released alligators. Early results show that not only are the captive-reared alligators growing faster than their wild counterparts, but they are also reproducing at an earlier age than wild alligators.

Valentine Lance

Grants

The Center for Reproduction of Endangered Species is grateful to the following for their support of imperiled wildlife:

The **Offield Family Foundation** made a generous grant of $100,000 to build the CRES endowment, so that conservation research programs may continue in perpetuity. Additional grants to the CRES endowment were made by the **Sidney Byers Charitable Trust** and the **Sahan Daywi Foundation Fund of the California Foundation**. The **John and Beverly Stauffer Foundation** gave a grant in support of Dr. Oliver Ryder's studies of molecular genetic assessment and monitoring black rhino populations in Kenya. Zoological Society of San Diego Trustee Emeritus **Dr. Lee Monroe and his wife, Bobbie**, recently gave a gift to CRES to extend an internship for the reproductive physiology division; to purchase supplies for the endocrinology division; and to purchase badly needed equipment for the pathology and virology/immunology divisions.

Amerman Foundation Grant Benefits California Condors

The Zoological Society of San Diego has been directly involved with the recovery program for the California condor since 1982. During this period, the program has gone through a series of evolutions. The emphasis now is on captive propagation, behavior studies, and releasing birds back into native habitat. Propagation efforts at the San Diego Wild Animal Park have produced more than 60 chicks of this critically endangered species, some of which have been released back into the wilds of California and Arizona during the past few years.

In conjunction with propagation, the behavioral studies are an important aspect. The Amerman Foundation grant has contributed to the purchase of video equipment and cameras for the California Condor Recovery Program at the Wild Animal Park. Monitoring the behaviors of these birds has contributed to the scientific data base. Our team of behaviorists uses a variety of equipment so that the birds are under constant observation. Video cameras and time-lapse recorders are important for such behavioral studies, and CRES is grateful to the Amerman Foundation for this generous gift. The behavioral data are also being used to determine if there are differences in California condors that are puppet raised versus parent raised, which will provide researchers with the most appropriate candidates for release back into the wild.

Check This Out!

Let's face it—paying bills and reconciling expenses each month can be a tortuous task. Although we cannot make your expenses disappear, here's something that may help put a little fun into your end-of-the-month and daily check-writing routine.

Checks In The Mail, a catalog and manufacturing company, has developed two fabulous, animal-themed check series featuring two of your favorite species. These beautifully photographed checks express the natural wonder and uniqueness of our wildlife.

For cat fanciers, Kat Kraze is "purrfect" with its fabulous images of cheetahs, lions, ocelots, and tigers. Or have polar bears, Alaskan brown bears, and giant pandas captured your heart? Well, bear in mind that the Bear Hugs series features these "beary" all-time favorites.

Each animal check series is even more special than it appears because a portion of the proceeds from the sale of these checks directly benefits CRES. Steve Tatarian, vice-president of sales and marketing at Checks In The Mail, is excited about this project and states, "Our team is in the business of providing checks and related products that help our customers express their individuality and personal style. The partnerships we have developed with CRES and other cause-related organizations allow us to accomplish this. Plus, we're contributing in a meaningful way to the success of people in this country who are doing important work for our future, like CRES."

Checks In The Mail:
1-800-733-4443
www.checksinthemail.com

So the next time you bring out your checkbook and see the incredible animal species on your CRES checks, you can feel good knowing that you have helped CRES continue its important work of protecting the future of endangered animals.

Memorial Gifts for CRES

Many have chosen to honor the memory of someone special with a gift to CRES. Memorial gifts to CRES help fund its important work and can lead to a lasting remembrance for your loved one.

Cumulative memorial gifts of $1,000 or more will be recognized on our CRES plaque located near Gorilla Tropics at the San Diego Zoo. This plaque, which is updated early each year, will help establish a legacy both for your loved one and the critical conservation work done at CRES.

For further information about our memorial giving program or to request an informational brochure, please call Juli Hilliard in the development office at (619) 685-3218.

Cans for Critters Crushes Through the Top!

It has been a record-breaking 18th year for the Cans for Critters recycling program. With the help of the children of San Diego and their parents, the program raised almost $20,000, crushed 600,000 cans, and won the Youth Stewardship Award given by EarthWorks and the City of San Diego Environmental Service Department! One busy child, Kaitlyn Kaseno, collected 7,038 cans to win the top prize at the Cans for Critters Jamboree, held at the San Diego Zoo on May 15, 1998.

The Jamboree was attended by the 20 top collectors of each participating school, their parents and teachers, with the total attendance at just under 1,000! Each participant was greeted by our mascots, Rube and Ruby Hippo, and Campfire Kathy with her educational recycling songs. Our Zoo's animal trainer team, accompanied by Chobe the cheetah and other animal friends, gave the children an idea of how important the research at CRES is, to ensure a future on our planet for endangered species.

This year, due to the amazing hard work of all the schoolchildren, not only were the top collectors of each school announced, but for the first time we also had 2nd and 3rd place winners receive prizes. Chris Cubbison, our 2nd place winner, collected 6,560 cans (his brother won last year), and Jillian Kerstetter, our third place winner, collected 6,364 cans.

Jammin' Z90 radio station was on hand to play music, announce two lucky winners of certificates for Z90 school appearances, and pass out stickers to all the participants as they made their way to an enjoyable free day at the Zoo.

For more information on what your organization, school, or company CAN do to help CRES and the environment, please call Kathleen Rafaat in the development department at (619) 557-3995. The program can be tailored to your individual or company's needs.

Joni Duke

Ginger Hartnett, San Diego Zoo animal handler, with top can collectors (from left): Chris Cubbison (2nd place), Kaitlyn Kaseno (1st place), and Jillian Kerstetter (3rd place), holding Boa Diddley, a six-foot boa constrictor.

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SAN DIEGO ZOO
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CENTER FOR REPRODUCTION OF ENDANGERED SPECIES

DANCIN' & PRANCIN'

Beneath the CREScent Moon

COME FOR A ROARING GOOD TIME!

Come for Dancin' & Prancin' Beneath the CREScent Moon at the 18th Annual Celebration for the Critters and help save the world's endangered wildlife!

SATURDAY, SEPTEMBER 26, 1998
7 P.M. TO MIDNIGHT AT THE SAN DIEGO ZOO

- Feast on the exotic taste treats of more than 100 restaurants and beverage vendors.
- Dance and prance to the rock-and-roll rhythms of Haute Chile and the Robbie Hutchinson Tropical Trio.
- Play zany games, ride the Skyfari under the stars, and meet some animal friends.
- Take a chance at drawings for fabulous prizes, including Delta Air Lines tickets and a Tiger River spa, and be part of a sensational Silent Auction.

Proceeds from this wild affair at the Zoo benefit CRES, the Zoological Society's Center for Reproduction of Endangered Species, and its worldwide conservation efforts.

$50 PER PERSON ($60 after September 11)

Tickets to this event are also an endangered species, so order today!
Tickets will be held at the door. Free parking.

FOR VIP INFORMATION AND TO CHARGE YOUR TICKETS, CALL (619) 231-1515, EXT. 4236.

Zoo membership is not required. Ticket sales will be limited. You must be 21 or older to attend.

CRES
REPORT®
CENTER FOR REPRODUCTION OF ENDANGERED SPECIES

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SAN DIEGO ZOO
SAN DIEGO WILD ANIMAL PARK

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